

**2017 WATER QUALITY MONITORING  
REPORT FOR THE BIG TUJUNGA WASH  
MITIGATION AREA**

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## SECTION 1.0 – EXECUTIVE SUMMARY

As part of a water quality monitoring program on-going since 2000, sampling of the Big Tujunga Ponds and Haines Canyon Creek was conducted on December 21, 2017. The results of the water quality sample are summarized below:

- Dissolved oxygen levels were below the recommended minimum (5.0 mg/L) at all three stations.
- Observed pH levels were within Basin Plan recommendations for aquatic life at one station (Haines Canyon Creek leaving the site). Observed pH levels were below the Basin Plan recommendations at the remaining two sites.
- Nutrient levels were low with one exception; the total phosphorus level was slightly above EPA's recommendations for streams in the outflow from the Tujunga Ponds and slightly below the EPA's recommendations at the remaining two sites.
- No pesticides or residual chlorine were observed.
- Turbidity levels were low.
- Bacteria levels were above the freshwater bacteria standard at two stations (in the ponds and at the outflow from the ponds). However, the standards are for *E.coli* and the water quality results are for fecal coliform and total coliform.

## SECTION 2.0 – BACKGROUND

The County of Los Angeles Department of Public Works (LACDPW) purchased an approximately 210-acre parcel in Big Tujunga Wash as a mitigation area for Los Angeles County Flood Control District (LACFCD) projects throughout Los Angeles County. In coordination with local agencies, the LACDPW defined a number of measures to improve habitat quality at the site. A Final Master Mitigation Plan (FMMP) was prepared to guide the implementation of these enhancements. The FMMP also includes a monitoring program to gather data on conditions at the site during implementation of the improvements. The FMMP was prepared and is currently being implemented by Chambers Group, Inc. (Chambers Group). Water quality monitoring was conducted on a quarterly basis from the fourth quarter of 2000 through the fourth quarter of 2005. In 2006, monitoring was conducted on a semi-annual basis. In 2007 through 2009 monitoring was conducted annually, in December. In 2010, monitoring was conducted in November; pesticide sampling was conducted in early December. In 2012, monitoring was conducted in February and November. Since that time, monitoring has been conducted once per year, in October or November. This report presents the results of the water quality sampling for December 2017.

The project site is located just east of Hansen Dam in the Shadow Hills area of the City of Los Angeles. Both Big Tujunga Wash, an intermittent stream, and Haines Canyon Creek, a perennial stream, traverse the project site in an east-to-west direction. The two Tujunga Ponds are located outside of the site boundary, at the far eastern side of the site.

### 2.1 PROJECT SITE ACTIVITIES

A timeline of project-related activities including water quality sampling events is presented in Table 1.

**Table 1: Major Activities to Date at the Big Tujunga Wash Mitigation Area**

Date	Activity
4/2000	Baseline water quality sampling
11/2000 to 11/2001	Arundo, tamarisk, and pepper tree removal Chemical (Rodeo®) application
12/2000 to 11/2002	Water hyacinth removal
12/2000	Fish Sampling at Haines Canyon Creek
12/2000	Water quality sampling
1/2001 to present	Exotic aquatic wildlife (non-native fish, crayfish, bullfrog, and turtle) removal – conducted quarterly
2/2001	Partial riparian planting
3/2001	Selective clearing at Canyon Trails Golf Club
3/2001	Water quality sampling
6/2001	Water quality sampling
7/2001	Fish Sampling at Haines Canyon Creek
9/2001	Water quality sampling
10/2001 to 11/2001	Fish Sampling at Haines Canyon Creek
12/2001	Water quality sampling
1/2002	Final riparian planting
2/2002	Upland replacement planting

<b>Date</b>	<b>Activity</b>
3/2002	Water quality sampling
6/2002	Water quality sampling
7/2002	Fish Sampling at Haines Canyon Creek
9/2002	Water quality sampling
10/2002	Grading at Canyon Trails Golf Club begins
11/2002	Fish Sampling at Haines Canyon Creek
12/2002	Water quality sampling
3/2003	Water quality sampling
4/2003	Meeting with Canyon Trails Golf Club to discuss future use of herbicides and fertilizers
6/2003	Water quality sampling
8/2003	Fish Sampling at Haines Canyon Creek
9/2003	Water quality sampling
Fall 2003	Completion of the golf course construction
12/2003	Water quality sampling
1/2004	Fish Sampling at Haines Canyon Creek
4/2004	Water quality sampling
4/2004	Rock Dam Removal Day
6/2004	Angeles National Golf Club (previously named Canyon Trails) opens to the public
7/2004	Water quality sampling
10/2004	Water quality sampling
12/2004	Water quality sampling
4/2005	Water quality sampling
6/2005	Water quality sampling
10/2005	Water quality sampling
12/2005	Water quality sampling
7/2006	Water quality sampling
12/2006	Water quality sampling
12/2007	Water quality sampling
12/2008	Water quality sampling
8/2009 to 10/2009	The Station Fire was the largest fire in the recorded history of Angeles National Forest and the 10th largest fire in California since 1933. The fire burned a total of 160,577 acres. The fire was fully contained on October 16, 2009. (Source: Angeles National Forest Incident Update available - <a href="http://www.inciweb.org/incident/1856/">http://www.inciweb.org/incident/1856/</a> )
12/2009	Water quality sampling
11/2010	Water quality sampling
12/2010	Water quality sampling for pesticides
9/2011 to 1/2012	Water lettuce removal
2/2012	Water quality sampling
11/2012	Water quality sampling
10/2013	Water quality sampling
10/2014	Water quality sampling

Date	Activity
11/2015	Water quality sampling
11/07/16	Water quality sampling
12/21/17	Water quality sampling

## 2.2 UPSTREAM LAND USES

The monitoring program has been designed to specifically address inputs to the site from upstream land uses such as the Angeles National Golf Club (previously named Canyon Trails Golf Club). The golf course has been operating since June 2004. Potential impacts to aquatic species from run-on to the site that contains excessive nutrients or pesticides are of primary concern. Pesticides potentially used at the Angeles National Golf Course include herbicides, insecticides, fungicides, and grass growth inhibitors (Table 2).

Actual use of pesticides is based on golf course maintenance needs. Based on the pesticide use information from the Golf Club, analysis of water samples for glyphosate, chlorpyrifos, other organophosphorous pesticides, and organochlorine pesticides is included in the sampling program for the Big Tujunga Wash Mitigation Area.

**Table 2: Pesticides Potentially Used at the Angeles National Golf Club**

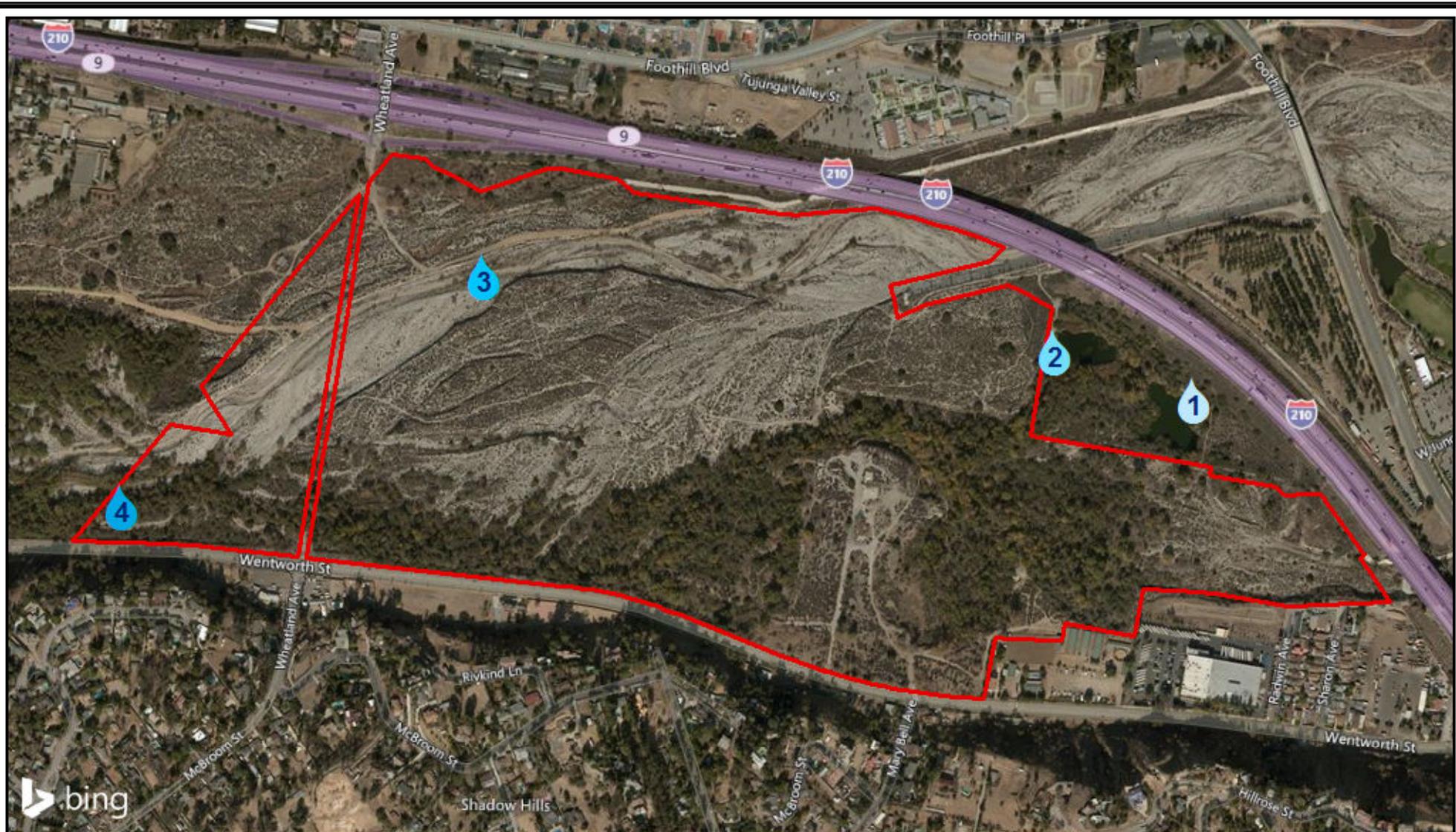
Manufacturer and Product Name	Active Ingredient	Use
Syngenta Primo Maxx	trinexapac-ethyl	grass growth inhibitor used for turf management
Syngenta Reward	diquat dibromide	landscape and aquatic herbicide
Syngenta Barricade	prodiamine	pre-emergent herbicide
Bayer Prostar 70 WP	flutolanil	fungicide
Monsanto QuikPRO	ammonium salt of glyphosphate and diquat dibromide	herbicide
Monsanto Rodeo® Verdicon Kleenup® Pro Lesco Prosecutor	glyphosate	emerged aquatic weed and brush herbicide
Valent ProGibb T&O	gibberellic acid	plant growth regulator
BASF Insignia 20 WG	pyraclostrobin	fungicide
BASF Stalker	Isopropylamine salt of Imazapyr	herbicide
Dow Agrosiences Surflan A.S.	oryzalin	herbicide
Dow Agrosiences Dursban Pro	chlorpyrifos	insecticide
Mycogen Scythe	pelargonic acid	herbicide

Source: J. Reidinger, Angeles National Golf Club, pers. comm. to M. Chimienti, LACDPW, March 18, 2004 and Angeles National Golf Club Monthly Summary Pesticide Use Reports (December 2004, February 2005 and April 2007).

## SECTION 3.0 – MATERIALS AND METHODS

### 3.1 SAMPLING STATIONS

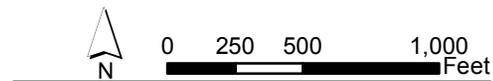
Four sampling locations have been identified for the monitoring program for the Big Tujunga Wash Mitigation Area (Figure 1). Table 3 summarizes sampling locations and the conditions observed on December 21, 2017.



**Legend**

- Mitigation Area
- 💧 **Water Quality Sampling Station**
- 💧 1 - Inflow to Tujunga Ponds
- 💧 2 - Outflow from Tujunga Ponds
- 💧 3 - Big Tujunga Wash
- 💧 4 - Haines Canyon Creek, just before exit from site

**Figure 1**  
Water Quality  
Sampling Stations



**Table 3: Water Quality Sampling Locations and Conditions for December 2017**

<b>Date</b>	December 21, 2017		
<b>Air Temperature</b>	Approximately 55 degrees Fahrenheit during sample collection period		
<b>Skies</b>	Sunny, clear		
<b>Observations</b>	Water clear at all locations; extensive <i>Lemna</i> cover on surface of ponds		
<b>Sampling Locations</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Time of sample</b>
Haines Canyon Creek	34 16' 0.092" N	118 21' 25.716" W	1145
Haines Canyon Creek, inflow to Tujunga Ponds	34 16' 6.040" N	118 20' 22.616" W	1018
Haines Canyon Creek, outflow from Tujunga Ponds	34 16' 8.263" N	118 20' 30.824" W	1040
Big Tujunga Wash	34 16' 11.615" N	118 21' 4.519" W	station dry

### 3.2 SAMPLING PARAMETERS

Water Quality. Table 4 summarizes the sampling parameters included in the water quality monitoring program. The following meter was used in the field:

- Dissolved oxygen, pH and temperature – YSI 556-01 Multi Probe System

Analytical results were performed at Enthalpy Analytical, LLC, located in Orange, California and Test America, located in Savannah, Georgia. Samples were taken at mid-depth, along a transect perpendicular to the stream channel alignment. Quality assurance/quality control (QA/QC) procedures in each laboratory followed the methods described in their respective Quality Assurance Manuals.

**Table 4: Water Quality Sampling Parameters**

Parameter	Analysis Location	Analytical Method
total Kjeldahl nitrogen (TKN)	laboratory	EPA 351.2
nitrite - nitrogen (NO <sub>2</sub> -N)	laboratory	EPA 300.0 by IC
nitrate-nitrogen (NO <sub>3</sub> -N)	laboratory	EPA 300.0 by IC
ammonia (NH <sub>4</sub> )	laboratory	EPA 350.1
orthophosphate - P	laboratory	Standard Methods 4500PE/EPA 365.1
total phosphorus - P	laboratory	Standard Methods 4500PE/EPA 365.1
total coliform	laboratory	Standard Methods 9221B
fecal coliform	laboratory	Standard Methods 9221C
turbidity	field	EPA 180.1
glyphosate (Roundup/Rodeo) <sup>1</sup>	laboratory	EPA 547
chlorpyrifos and organophosphorous pesticides <sup>2</sup>	laboratory	EPA 8141A
organochlorine pesticides <sup>3</sup>	laboratory	EPA 608
dissolved oxygen	field	Standard Methods 4500-O G
total residual chlorine	laboratory	Standard Methods 4500-Cl
temperature	field	Standard Methods 2550
pH	field	Standard Methods 4500-H+

Sources for analytical methods:

EPA. Method and Guidance for Analysis of Water.

American Public Health Association, American Waterworks Association, and Water Environment Federation. 1998.

Standard Methods for the Examination of Water and Wastewater, 20th Edition. Washington D.C.

1 First analysis completed in the first quarter of 2004

2 First analysis completed in the fourth quarter of 2004. This analytical method tests for the following chemicals: azinphos- methyl, bolster, coumaphos, diazinon, chlorpyrifos, demeton, dichlorvos, disulfoton, ethoprop, fensulfothion, fenthion, mevinphos, naled, phorate, runnel, stiropfos, parathion-methyl, tokuthion, and trichloronate.

3 First analysis completed in December 2007. EPA method 608 tests for aldrin, BHC, Chlordane, DDD, DDE, DDT, dieldrin, endrin, endosulfan, heptaclor, methoxychlor, toxaphene and PCB.

## SECTION 4.0 – RESULTS

### 4.1 BASELINE WATER QUALITY

Sampling and analysis conducted by LACDPW prior to implementation of the FMMP is considered the baseline for water quality conditions at the site. The results of baseline analyses conducted in April 2000 are presented in Table 5. Higher bacteria and turbidity observed in the 4/18/2000 samples are attributable to a rain event. Phosphorus levels were also high in the 4/18/2000 samples, due to release from sediments.

### 4.2 DECEMBER 2017 RESULTS

Water Quality. Results of analyses conducted by Enthalpy Analytical and Test America are appended to this report (Appendix A) and summarized in Table 6.

**Table 5: Baseline Water Quality (2000)**

Parameter	Units	Date	Haines Canyon Creek, Inflow to Tujunga Ponds	Haines Canyon Creek, Outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
Total coliform	MPN/100 ml	4/12/00	3,000	5,000	170	1,700
		4/18/00	2,200	170,000	2,400	70,000
Fecal coliform	MPN/100 ml	4/12/00	500	300	40	80
		4/18/00	500	30,000	2,400	50,000
Ammonia-N	mg/L	4/12/00	0	0	0	0
		4/18/00	0	0	0	0
Nitrate-N	mg/L	4/12/00	8.38	5.19	0	3.73
		4/18/00	8.2	3.91	0.253	0.438
Nitrite-N	mg/L	4/12/00	0.061	0	0	0
		4/18/00	0.055	0	0	0
Kjeldahl-N	mg/L	4/12/00	0	0.1062	0.163	0
		4/18/00	0	0.848	0.42	0.428
Dissolved phosphorus	mg/L	4/12/00	0.078	0.056	0	0.063
		4/18/00	0.089	0.148	0.111	0.163
Total phosphorus	mg/L	4/12/00	0.086	0.062	0	0.066
		4/18/00	0.113	0.153	0.134	0.211
pH	std units	4/12/00	7.78	7.68	7.96	7.91
		4/18/00	7.18	7.47	7.45	7.06
Turbidity	NTU	4/12/00	1.83	0.38	1.75	0.6
		4/18/00	4.24	323	4070	737

**Table 6: Summary of Water Quality Results – December 21, 2017**

Parameter	Units	Haines Canyon Creek, Inflow to Tujunga Ponds	Haines Canyon Creek, Outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
Dissolved Oxygen	mg/L	4.9	4.7	NA	4.5
pH	std units	5.79	6.19	NA	7.6
Total residual chlorine	mg/L	ND	ND	NA	ND
Ammonia-Nitrogen	mg/L	ND	ND	NA	ND
Kjeldahl Nitrogen	mg/L	0.90	0.93	NA	0.48
Nitrite-Nitrogen	mg/L	ND	ND	NA	ND
Nitrate-Nitrogen	mg/L	8.18	6.18	NA	4.73
Orthophosphate-P	mg/L	ND	ND	NA	ND
Total phosphorus-P	mg/L	0.04	0.12	NA	0.04
Glyphosate	µg/L	ND	ND	NA	ND
Chloropyrifos*	µg/L	ND	ND	NA	ND
Pesticides (EPA 608)**	µg/L	ND	ND	NA	ND
Turbidity	NTU	2.47	2.09	NA	0.38
Fecal Coliform Bacteria	(MPN/100 ml)	300	38	NA	9
Total Coliform Bacteria	(MPN/100 ml)	>1600	>1600	NA	670

NA – data not available; station dry on the sample date

NTU – nephelometric turbidity units      MPN – most probable number      ND – non-detect

\* The analytical method used for chloropyrifos (EPA 8141A) also tests for the following chemicals: azinphos-methyl, bolster, coumaphos, diazinon, demeton, dichlorvos, disulfoton, ethoprop, fensulfothion, fenthion, mevinphos, naled, phorate, runnel, stiropfos, parathion-methyl, tokuthion, and trichloronate.

\*\* EPA method 608 tests for aldrin, BHC, Chlordane, DDD, DDE, DDT, dieldrin, endrin, endosulfan, heptaclor, methoxychlor, and toxaphene

### 4.3 COMPARISON OF RESULTS WITH AQUATIC LIFE CRITERIA

Tables 7 through 12 present objectives established by the United States Environmental Protection Agency (USEPA) and the Los Angeles Regional Water Quality Control Board (Regional Board) for protection of beneficial uses including freshwater aquatic life.

**Table 7: National and Local Recommended Water Quality Criteria - Freshwaters**

Parameter	Basin Plan Objectives <sup>a</sup>	EPA Criteria		
		CMC	CCC	Human Health
Temperature (°C)	b	See Table 13	See Table 13	--
Dissolved oxygen (mg/L)	>7.0 mean >5.0 min	5.0 <sup>c</sup> (warmwater, early life stages, 1-day minimum)	6.0 <sup>c</sup> (warmwater, early life stages, 7-day mean)	--
pH	6.5 - 8.5	--	6.5-9.0 <sup>d,e</sup>	5.0-9.0 <sup>d,e</sup>
Total residual chlorine (mg/L)	0.1	0.019 <sup>d,e</sup>	0.011 <sup>d,e</sup>	4.0 (maximum residual disinfectant level goal)
Fecal coliform (MPN/100 ml)	126 <sup>f</sup> (geometric mean for <i>E. coli</i> ) (water contact recreation)	--	--	Swimming stds: 33 <sup>g</sup> (geometric mean for enterococci) 126 <sup>g</sup> (geometric mean for <i>E. coli</i> )
Ammonia-nitrogen (mg/L)	See Tables 11 and 12	See Table 9	See Table 10	--
Nitrite-nitrogen (mg/L)	1	--	--	1 (primary drinking water std.)
Nitrate-nitrogen (mg/L)	10	--	--	10 (primary drinking water std.)
Total phosphorus (mg/L)	--	<0.05 – 0.1 <sup>e</sup> (recommendation for streams, no criterion)		--
Turbidity (NTU)	h	i	i	5 (secondary drinking water standard) 0.5 – 1.0 (std. for systems that filter)

**Notes:**

-- No criterion

CMC Criteria Maximum Concentration or acute criterion

CCC Criteria Continuous Concentration or chronic criterion

a Source: California Regional Water Quality Control Board, Los Angeles Region. 1994. Water Quality Control Plan (Basin Plan). As amended.

b Narrative criterion: "The natural receiving water temperature of all regional waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses."

c Source: USEPA. 1986. Ambient Water Quality Criteria for Dissolved Oxygen. EPA 440-5-86-003. Washington, D.C. d

Source: USEPA. 1999. National Recommended Water Quality Criteria – Correction. EPA 822-Z-99-001. Washington, D.C.

e Source: USEPA. 1986. Quality Criteria for Water. EPA 440/5-86-001. Washington, D.C.

- f Single sample limits – E. coli density shall not exceed 235/100 ml.
- g Source: USEPA. 1986. Ambient Water Quality Criteria for Bacteria – 1986. EPA 440-5-84-002. Washington, D.C.
- h Narrative criterion: “Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.”
- i Narrative criterion for freshwater fish and other aquatic life: “Settleable and suspended solids should not reduce the depth of the compensation point for photosynthetic activity by more than 10 percent from the seasonally established norm for aquatic life.”

**Table 8: Temperature and pH-Dependent Values of the CMC (Acute Criterion) Mussels Absent**

<b>CMC: Mussels Absent, mg N/L</b>										
<b>pH</b>	<b>Temperature, C</b>									
	<b>0</b>	<b>14</b>	<b>16</b>	<b>18</b>	<b>20</b>	<b>22</b>	<b>24</b>	<b>26</b>	<b>28</b>	<b>30</b>
6.5	58.0	58.0	58.0	58.0	43.7	37.0	31.4	26.6	22.5	19.1
6.6	55.7	55.7	55.7	55.7	41.9	35.5	30.1	25.5	21.6	18.3
6.7	53.0	53.0	53.0	53.0	39.9	33.8	28.6	24.3	20.6	17.4
6.8	49.9	49.9	49.9	49.9	37.6	31.9	27.0	22.9	19.4	16.4
6.9	46.5	46.5	46.5	46.5	35.1	29.7	25.2	21.3	18.1	15.3
7.0	42.9	42.9	42.9	42.9	32.3	27.4	23.2	19.7	16.7	14.1
7.1	39.1	39.1	39.1	39.1	29.4	24.9	21.1	17.9	15.2	12.8
7.2	35.1	35.1	35.1	35.1	26.4	22.4	19.0	16.1	13.6	11.5
7.3	31.2	31.2	31.2	31.2	23.5	19.9	16.8	14.3	12.1	10.2
7.4	27.3	27.3	27.3	27.3	20.6	17.4	14.8	12.5	10.6	8.98
7.5	23.6	23.6	23.6	23.6	17.8	15.1	12.8	10.8	9.18	7.77
7.6	20.2	20.2	20.2	20.2	15.3	12.9	10.9	9.27	7.86	6.66
7.7	17.2	17.2	17.2	17.2	12.9	11.0	9.28	7.86	6.66	5.64
7.8	14.4	14.4	14.4	14.4	10.9	9.21	7.80	6.61	5.60	4.74
7.9	12.0	12.0	12.0	12.0	9.07	7.69	6.51	5.52	4.67	3.96
8.0	9.99	9.99	9.99	9.99	7.53	6.38	5.40	4.58	3.88	3.29
8.1	8.26	8.26	8.26	8.26	6.22	5.27	4.47	3.78	3.21	2.72
8.2	6.81	6.81	6.81	6.81	5.13	4.34	3.68	3.12	2.64	2.24
8.3	5.60	5.60	5.60	5.60	4.22	3.58	3.03	2.57	2.18	1.84
8.4	4.61	4.61	4.61	4.61	3.48	2.95	2.50	2.11	1.79	1.52
8.5	3.81	3.81	3.81	3.81	2.87	2.43	2.06	1.74	1.48	1.25
8.6	3.15	3.15	3.15	3.15	2.37	2.01	1.70	1.44	1.22	1.04
8.7	2.62	2.62	2.62	2.62	1.97	1.67	1.42	1.20	1.02	0.862
8.8	2.19	2.19	2.19	2.19	1.65	1.40	1.19	1.00	0.851	0.721
8.9	1.85	1.85	1.85	1.85	1.39	1.18	1.00	0.847	0.718	0.608
9.0	1.57	1.57	1.57	1.57	1.19	1.00	0.851	0.721	0.611	0.517

Note: Native species of freshwater mussels are not known for Big Tujunga Wash or Haines Canyon Creek. CMC – Criteria Maximum Concentration (ammonia)

Source: USEPA. 2009. Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater. EPA 822-D-09-001. Washington, D.C

**Table 9: Temperature and pH-Dependent Values of the CCC (Chronic Criterion) Mussels Absent and Early Fish Life Stages Present**

CCC: Mussels Absent and Early Fish Life Stages Present, mg N/L										
pH	Temperature (° Celsius)									
	0	14	16	18	20	22	24	26	28	30
6.5	6.36	6.36	6.36	6.36	6.36	6.11	5.37	4.72	4.15	3.65
6.6	6.26	6.26	6.26	6.26	6.26	6.02	5.29	4.65	4.09	3.60
6.7	6.15	6.15	6.15	6.15	6.15	5.91	5.19	4.57	4.01	3.53
6.8	6.00	6.00	6.00	6.00	6.00	5.77	5.08	4.46	3.92	3.45
6.9	5.84	5.84	5.84	5.84	5.84	5.61	4.93	4.34	3.81	3.35
7.0	5.64	5.64	5.64	5.64	5.64	5.42	4.76	4.19	3.68	3.24
7.1	5.41	5.41	5.41	5.41	5.41	5.20	4.57	4.02	3.53	3.10
7.2	5.14	5.14	5.14	5.14	5.14	4.94	4.35	3.82	3.36	2.95
7.3	4.84	4.84	4.84	4.84	4.84	4.66	4.09	3.60	3.16	2.78
7.4	4.52	4.52	4.52	4.52	4.52	4.34	3.82	3.36	2.95	2.59
7.5	4.16	4.16	4.16	4.16	4.16	4.00	3.52	3.09	2.72	2.39
7.6	3.79	3.79	3.79	3.79	3.79	3.65	3.21	2.82	2.48	2.18
7.7	3.41	3.41	3.41	3.41	3.41	3.28	2.89	2.54	2.23	1.96
7.8	3.04	3.04	3.04	3.04	3.04	2.92	2.57	2.26	1.98	1.74
7.9	2.67	2.67	2.67	2.67	2.67	2.57	2.26	1.98	1.74	1.53
8.0	2.32	2.32	2.32	2.32	2.32	2.23	1.96	1.72	1.52	1.33
8.1	2.00	2.00	2.00	2.00	2.00	1.92	1.69	1.49	1.31	1.15
8.2	1.71	1.71	1.71	1.71	1.71	1.64	1.45	1.27	1.12	0.982
8.3	1.45	1.45	1.45	1.45	1.45	1.40	1.23	1.08	0.949	0.835
8.4	1.23	1.23	1.23	1.23	1.23	1.18	1.04	0.914	0.804	0.706
8.5	1.04	1.04	1.04	1.04	1.04	0.999	0.878	0.772	0.679	0.597
8.6	0.878	0.878	0.878	0.878	0.878	0.844	0.742	0.652	0.573	0.504
8.7	0.742	0.742	0.742	0.742	0.742	0.714	0.628	0.552	0.485	0.426
8.8	0.631	0.631	0.631	0.631	0.631	0.606	0.533	0.469	0.412	0.362
8.9	0.539	0.539	0.539	0.539	0.539	0.518	0.455	0.400	0.352	0.309
9.0	0.464	0.464	0.464	0.464	0.464	0.446	0.392	0.345	0.303	0.266

Note: Native species of freshwater mussels are not known for Big Tujunga Wash or Haines Canyon Creek. CCC – Criteria Continuous Concentration (ammonia)

Source: USEPA. 2009. Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater. EPA 822-D-09-001. Washington, D.C.

**Table 10: 30-Day Average Objective for Ammonia-N for Freshwaters Applicable to Waters Subject to the “Early Life Stage Present” Condition (mg N/L)**

pH	Temperature (° Celsius)								
	14	16	18	20	22	24	26	28	30
6.5	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

Source: California Regional Water Quality Control Board, Los Angeles Region. 2005. Amendments to the Water Quality Control Plan – Los Angeles Region with Respect to Early Life Stage Implementation Provisions of the Inland Surface Water Ammonia Objectives for Freshwaters. Taken from USEPA. 1999. 1999 Update of Ambient Water Quality Criteria for Ammonia. EPA 822-R-99-014. Washington, D.C.

**Table 11: One-Hour Average Objective for Ammonia-N for Freshwaters (mg N/L)**

pH	Waters Designated COLD and/or MIGR	Waters Not Designated COLD and/or MIGR
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

Cold – Beneficial use designation of Cold Freshwater Habitat

MIGR – Beneficial use designation of Migration of Aquatic Organisms

Source: California Regional Water Quality Control Board, Los Angeles Region. 2002. Amendments to the Water Quality Control Plan – Los Angeles Region with Respect to Inland Surface Water Ammonia Objectives. Taken from USEPA. 1999. 1999 Update of Ambient Water Quality Criteria for Ammonia. EPA 822-R-99-014. Washington, D.C.

**Table 12: Example Calculated Values for Maximum Weekly Average Temperature for Growth and Short-Term Maxima for Survival of Juvenile and Adult Fishes During the Summer**

Species	Growth (°Celsius)	Maxima (°Celsius)
Black crappie	27	--
Bluegill	32	35
Channel catfish	32	35
Emerald shiner	30	--
Largemouth bass	32	34
Brook trout	19	24

Source: USEPA. 1986. Quality Criteria for Water. EPA 440/5-86-001. Washington, D.C.

## SECTION 5.0 – DISCUSSION

Results from the December 2017 sampling are described by parameter in Table 14.

**Table 13: Discussion of November 2016 Water Quality Sampling Results**

Parameter	Discussion
Dissolved oxygen	<ul style="list-style-type: none"> <li>Dissolved oxygen levels ranged from 4.5 mg/L in Haines Canyon Creek leaving the site to 4.9 mg/L in the Tujunga Ponds. DO levels at all three sample stations were below the minimum recommended level (5.0 mg/L) for warmwater fish species.</li> </ul>
pH	<ul style="list-style-type: none"> <li>Lowest pH was observed in the Tujunga Ponds (5.79), with highest pH observed in Haines Canyon Creek leaving the site (7.6). On this date, pH readings in the Haines Canyon Creek leaving the site were within the 6.5 to 8.5 range identified in the Basin Plan; pH readings in Haines Canyon Creek outflow from the Tujunga Ponds and the Tujunga Ponds were below the 6.5 to 8.5 range identified in the Basin Plan.</li> </ul>
Total residual chlorine	<ul style="list-style-type: none"> <li>No residual chlorine was detected at any station.</li> </ul>
Nitrogen	<ul style="list-style-type: none"> <li>Nitrate-nitrogen measurements at all stations were below the drinking water standard of 10 mg/L.</li> <li>Ammonia was below the detection limit at all stations.</li> </ul>
Phosphorus	<ul style="list-style-type: none"> <li>The observed concentration in the outflow from the ponds, 0.12 mg/L, is above the upper end of EPA's recommended range for streams to prevent excess algae growth (recommended range is &lt;0.05 – 0.1 mg/L). The observed concentration at the ponds (0.04) and in Haines Canyon Creek leaving the site (0.04) is below the lower end of the EPA's recommended range.</li> </ul>
Glyphosate	<ul style="list-style-type: none"> <li>Glyphosate was not detected at any station.</li> </ul>
Chloropyrifos and Organophosphorous Pesticides	<ul style="list-style-type: none"> <li>Chloropyrifos and the other pesticides tested using EPA's analytical method 8141A were not detected at any station.</li> </ul>
Organochlorine Pesticides	<ul style="list-style-type: none"> <li>Pesticides analyzed by EPA Method 608 were not detected at any station.</li> </ul>
Turbidity	<ul style="list-style-type: none"> <li>Turbidity levels were very low (&lt;2.5 NTU) at all stations.</li> </ul>

Bacteria	<ul style="list-style-type: none"><li>• The fresh water bacteria standard for water contact recreation is for <i>E. coli</i> (126 MPN/100 ml geometric mean, 235 MPN/100 ml single sample limits). Observed fecal coliform levels were below the standard in the outflow from the ponds and Haines Canyon Creek leaving the site. On this date, fecal coliform levels in the ponds were 300 MPN/100 ml. Sampling specifically for <i>E. coli</i> was not conducted.</li><li>• Total coliform levels ranged from 670 MPN/100 ml in the Haines Canyon Creek leaving the site to &gt;1,600 MPN/100 ml in the ponds and at the outflow from the ponds. [Note that recreation standards are for <i>E. coli</i>. Total coliform standards apply to marine waters and waterbodies where shellfish can be harvested for human consumption.]</li></ul>
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## SECTION 6.0 – GLOSSARY

**Ammonia-Nitrogen** –  $\text{NH}_3\text{-N}$  is a gaseous alkaline compound of nitrogen and hydrogen that is highly soluble in water. Un-ionized ammonia ( $\text{NH}_3$ ) is toxic to aquatic organisms. The proportions of  $\text{NH}_3$  and ammonium ( $\text{NH}_4^+$ ) and hydroxide ( $\text{OH}^-$ ) ions are dependent on temperature, pH, and salinity.

**Chlorine, residual** – The chlorination of water supplies and wastewaters serves to destroy or deactivate disease-producing organisms. Residual chlorine in natural waters is an aquatic toxicant.

**Chloropyrifos** - white crystal-like solid insecticide widely used in homes and on farms. Used to control cockroaches, fleas, termites, ticks crop pests.

**Coliform Bacteria** – several genera of bacteria belonging to the family Enterobacteriaceae. Based on the method of detection, the coliform group is historically defined as facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas and acid formation within 48 hours at 35 C.

**Fecal Coliform Bacteria** – part of the intestinal flora of warm-blooded animals. Presence in surface waters is considered an indication of pollution.

**Glyphosate** - white compound broad-spectrum herbicide used to kill weeds.

**Kjeldahl Nitrogen** – Named for the laboratory technique used for detection, Kjeldahl nitrogen includes organic nitrogen and ammonia nitrogen.

**Nitrate-Nitrogen** –  $\text{NO}_3\text{-N}$  is an essential nutrient for many photosynthetic autotrophs.

**Nitrite-Nitrogen** –  $\text{NO}_2\text{-N}$  is an intermediate oxidation state of nitrogen, both in the oxidation of ammonia to nitrate and in the reduction of nitrate.

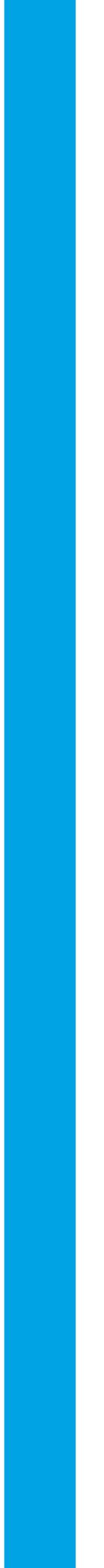
**Orthophosphorus** – the reactive form of phosphorus, commonly used as fertilizer.

**pH** – the hydrogen ion activity of water (pH) is measured on a logarithmic scale, ranging from 0 to 14. The pH of “pure” water at 25°C is 7.0 (neutral). Low pH is acidic; high pH is basic or alkaline.

**Total Phosphorus** – In natural waters, phosphorus occurs almost solely as orthophosphates, condensed phosphates, and organically bound phosphate. Phosphorus is essential to the growth of organisms.

**Turbidity** – attributable to the suspended and colloidal matter in water, including clay, silt, finely divided organic and inorganic matter, soluble colored organic compounds, and plankton and other microscopic organisms. The reduction of clearness in turbid waters diminishes the penetration of light and therefore can adversely affect photosynthesis.

## **APPENDIX A –LABORATORY RESULTS**





## Enthalpy Analytical, LLC

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Client: Chambers Group  
Address: 5 Hutton Centre Drive  
Suite 750  
Santa Ana, CA 92707  
Attn: Heather Franklin

Lab Request: 397642  
Report Date: 01/02/2018  
Date Received: 12/21/2017  
Client ID: 14294

Comments: Big Tajunga

The results for Glyphosate, Chloropyrifos and Ophos-Pesticides will follow in a separate report.

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAC are indicated on the report. This cover letter is an integral part of the final report.

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<b>Sample #</b>	<b>Client Sample ID</b>
397642-001	Big T-East Pond
397642-002	Big T - West Pond
397642-003	Big T - South Point 4

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Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

*Report Review performed by: Diane Galvan, Project Manager*

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 60 days from date received.

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<b>Matrix:</b> Water	<b>Client:</b> Chambers Group	<b>Collector:</b> client
<b>Sampled:</b> 12/21/2017 10:18	<b>Site:</b>	
<b>Sample #:</b> <u>397642-001</u>	<b>Client Sample #:</b> Big T-East Pond	<b>Sample Type:</b>

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 300.0	Prep Method: Method		QCBatchID: QC1185856				
<b>Nitrate, as Nitrogen</b>	<b>8.18</b>	1	0.1	mg/L	12/22/17 10:38	MH	
Nitrite, as Nitrogen	ND	1	0.1	mg/L	12/22/17 10:38	MH	
Method: EPA 350.1	Prep Method: Method		QCBatchID: QC1186029				
Ammonia, as Nitrogen	ND	1	0.1	mg/L	12/29/17	12/29/17	TP
Method: EPA 351.2	Prep Method: Method		QCBatchID: QC1186085				
<b>Total Kjeldahl Nitrogen</b>	<b>0.904</b>	1	0.4	mg/L	12/29/18	01/02/18	TP P
Method: SM 4500-Cl	Prep Method: Method		QCBatchID: QC1185842				
Chlorine, Total Residual	ND	1	0.1	mg/L	12/21/17 00:00	12/21/17 17:18	WW T2
Method: SM 4500-P-B-5-E	Prep Method: 4500-P-B-5		QCBatchID: QC1186065				
<b>Total Phosphorous as P</b>	<b>0.041</b>	1	0.02	mg/L	12/29/17	12/30/17	TP P
<b>Total Phosphorous as PO4</b>	<b>0.126</b>	1	0.06	mg/L	12/29/17	12/30/17	TP P
Method: SM 4500-P-E	Prep Method: Method		QCBatchID: QC1185883				
Orthophosphate, as P	ND	1	0.02	mg/L	12/22/17 17:30	12/22/17 17:54	TP
Orthophosphate, as PO4	ND	1	0.06	mg/L	12/22/17 17:30	12/22/17 17:54	TP
Method: SM 9221-B	Prep Method: Method		QCBatchID: QC1186028				
<b>Coliform, Total</b>	<b>&gt;1600</b>	1		MPN/100ml	12/21/17 17:30	12/24/17 16:06	MG
Method: SM 9221-E	Prep Method: Method		QCBatchID: QC1186028				
<b>Coliform, Fecal</b>	<b>300</b>	1		MPN/100ml	12/21/17 17:30	12/24/17 16:06	MG

<b>Matrix:</b> Water	<b>Client:</b> Chambers Group	<b>Collector:</b> client
<b>Sampled:</b> 12/21/2017 10:40	<b>Site:</b>	
<b>Sample #:</b> <u>397642-002</u>	<b>Client Sample #:</b> Big T - West Pond	<b>Sample Type:</b>

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 300.0	Prep Method: Method		QCBatchID: QC1185856				
<b>Nitrate, as Nitrogen</b>	<b>6.18</b>	1	0.1	mg/L	12/22/17 10:56	MH	
Nitrite, as Nitrogen	ND	1	0.1	mg/L	12/22/17 10:56	MH	
Method: EPA 350.1	Prep Method: Method		QCBatchID: QC1186029				
Ammonia, as Nitrogen	ND	1	0.1	mg/L	12/29/17	12/29/17	TP
Method: EPA 351.2	Prep Method: Method		QCBatchID: QC1186085				
<b>Total Kjeldahl Nitrogen</b>	<b>0.930</b>	1	0.4	mg/L	12/29/18	01/02/18	TP P
Method: SM 4500-Cl	Prep Method: Method		QCBatchID: QC1185842				
Chlorine, Total Residual	ND	1	0.1	mg/L	12/21/17 00:00	12/21/17 17:18	WW T2
Method: SM 4500-P-B-5-E	Prep Method: 4500-P-B-5		QCBatchID: QC1186065				
<b>Total Phosphorous as P</b>	<b>0.117</b>	1	0.02	mg/L	12/29/17	12/30/17	TP P
<b>Total Phosphorous as PO4</b>	<b>0.359</b>	1	0.06	mg/L	12/29/17	12/30/17	TP P
Method: SM 4500-P-E	Prep Method: Method		QCBatchID: QC1185883				
Orthophosphate, as P	ND	1	0.02	mg/L	12/22/17 17:30	12/22/17 17:54	TP
Orthophosphate, as PO4	ND	1	0.06	mg/L	12/22/17 17:30	12/22/17 17:54	TP
Method: SM 9221-B	Prep Method: Method		QCBatchID: QC1186028				
<b>Coliform, Total</b>	<b>&gt;1600</b>	1		MPN/100ml	12/21/17 17:30	12/24/17 16:06	MG
Method: SM 9221-E	Prep Method: Method		QCBatchID: QC1186028				
<b>Coliform, Fecal</b>	<b>38</b>	1		MPN/100ml	12/21/17 17:30	12/24/17 16:06	MG

Matrix: Water

Client: Chambers Group

Collector: client

Sampled: 12/21/2017 11:45

Site:

Sample #: **397642-003**

Client Sample #: Big T - South Point 4

Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 300.0	Prep Method: Method					QCBatchID: QC1185856	
<b>Nitrate, as Nitrogen</b>	<b>4.73</b>	1	0.1	mg/L	12/22/17 11:13	MH	
Nitrite, as Nitrogen	ND	1	0.1	mg/L	12/22/17 11:13	MH	
Method: EPA 350.1	Prep Method: Method					QCBatchID: QC1186029	
Ammonia, as Nitrogen	ND	1	0.1	mg/L	12/29/17	12/29/17	TP
Method: EPA 351.2	Prep Method: Method					QCBatchID: QC1186085	
<b>Total Kjeldahl Nitrogen</b>	<b>0.475</b>	1	0.4	mg/L	12/29/18	01/02/18	TP P
Method: SM 4500-Cl	Prep Method: Method					QCBatchID: QC1185842	
Chlorine, Total Residual	ND	1	0.1	mg/L	12/21/17 00:00	12/21/17 17:18	WW T2
Method: SM 4500-P-B-5-E	Prep Method: 4500-P-B-5					QCBatchID: QC1186065	
<b>Total Phosphorous as P</b>	<b>0.036</b>	1	0.02	mg/L	12/29/17	12/30/17	TP P
<b>Total Phosphorous as PO4</b>	<b>0.110</b>	1	0.06	mg/L	12/29/17	12/30/17	TP P
Method: SM 4500-P-E	Prep Method: Method					QCBatchID: QC1185883	
Orthophosphate, as P	ND	1	0.02	mg/L	12/22/17 17:30	12/22/17 17:54	TP
Orthophosphate, as PO4	ND	1	0.06	mg/L	12/22/17 17:30	12/22/17 17:54	TP
Method: SM 9221-B	Prep Method: Method					QCBatchID: QC1186028	
<b>Coliform, Total</b>	<b>670</b>	1		MPN/100ml	12/21/17 17:30	12/24/17 16:06	MG
Method: SM 9221-E	Prep Method: Method					QCBatchID: QC1186028	
<b>Coliform, Fecal</b>	<b>9</b>	1		MPN/100ml	12/21/17 17:30	12/24/17 16:06	MG

<b>QCBatchID:</b> <u>QC1185842</u>	<b>Analyst:</b> wei	<b>Method:</b> SM 4500-Cl
<b>Matrix:</b> Water	<b>Analyzed:</b> 12/21/2017	<b>Instrument:</b> CHEM (group)

**Blank Summary**

Analyte	Blank Result	Units	RDL	Notes
<b>QC1185842MB1</b>				
Chlorine, Total Residual	ND	mg/L	0.1	

**Lab Control Spike/ Lab Control Spike Duplicate Summary**

Analyte	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
	LCS	LCSD	LCS	LCSD		LCS	LCSD	RPD	%Rec	RPD	
<b>QC1185842LCS1</b>											
Chlorine, Total Residual	1		0.93		mg/L	93			80-120		

**Duplicate Summary**

Analyte	Sample Amount	Duplicate Amount	Units	RPD	Limits RPD	Notes
<b>QC1185842DUP1</b>						
Chlorine, Total Residual	ND	ND	mg/L	0.0	20	Source: 397389-001

<b>QCBatchID:</b> QC1185856	<b>Analyst:</b> mhuo	<b>Method:</b> EPA 300.0
<b>Matrix:</b> Water	<b>Analyzed:</b> 12/22/2017	<b>Instrument:</b> AAICP (group)

**Blank Summary**

Analyte	Blank Result	Units	RDL	Notes
<b>QC1185856MB1</b>				
Chloride	ND	mg/L	1	
Nitrate, as Nitrogen	ND	mg/L	0.1	
Nitrate, as NO3	ND	mg/L	0.44	
Nitrite, as Nitrogen	ND	mg/L	0.1	
Nitrite, as NO2	ND	mg/L	0.33	
Sulfate	ND	mg/L	1	

**Lab Control Spike/ Lab Control Spike Duplicate Summary**

Analyte	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
	LCS	LCSD	LCS	LCSD		LCS	LCSD	RPD	%Rec	RPD	
<b>QC1185856LCS1</b>											
Chloride	100		103		mg/L	103			90-110		
Nitrate, as Nitrogen	9.03		8.94		mg/L	99			90-110		
Nitrate, as NO3	40		39.6		mg/L	99			90-110		
Nitrite, as Nitrogen	9.15		9.35		mg/L	102			90-110		
Nitrite, as NO2	30		30.7		mg/L	102			90-110		
Sulfate	50		52.2		mg/L	104			90-110		

**Matrix Spike/Matrix Spike Duplicate Summary**

Analyte	Sample Amount	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
		MS	MSD	MS	MSD		MS	MSD	RPD	%Rec	RPD	
<b>QC1185856MS1, QC1185856MSD1</b> <span style="float:right">Source: 397515-001</span>												
Chloride	54.7	100	100	155	155	mg/L	100	100	0.0	80-120	20	
Nitrate, as Nitrogen	0.765	9.03	9.03	9.63	9.69	mg/L	98	99	0.6	80-120	20	
Nitrate, as NO3	3.39	40	40	42.6	42.9	mg/L	98	99	0.7	80-120	20	
Nitrite, as Nitrogen	ND	9.15	9.15	8.78	8.84	mg/L	96	97	0.7	80-120	20	
Nitrite, as NO2	ND	30	30	28.8	29.0	mg/L	96	97	0.7	80-120	20	
Sulfate	12.2	50	50	64.3	64.6	mg/L	104	105	0.5	80-120	20	
<b>QC1185856MS2, QC1185856MSD2</b> <span style="float:right">Source: 397642-001</span>												
Chloride	42.7	100	100	143	143	mg/L	100	100	0.0	80-120	20	
Nitrate, as Nitrogen	8.18	9.03	9.03	17.5	17.5	mg/L	103	103	0.0	80-120	20	
Nitrate, as NO3	36.2	40	40	77.7	77.7	mg/L	104	104	0.0	80-120	20	
Nitrite, as Nitrogen	ND	9.15	9.15	8.73	8.76	mg/L	95	96	0.3	80-120	20	
Nitrite, as NO2	ND	30	30	28.6	28.7	mg/L	95	96	0.3	80-120	20	
Sulfate	48.6	50	50	99.3	98.9	mg/L	101	101	0.4	80-120	20	

<b>QCBatchID:</b> <u>QC1185883</u>	<b>Analyst:</b> npham	<b>Method:</b> SM 4500-P-E
<b>Matrix:</b> Water	<b>Analyzed:</b> 12/22/2017	<b>Instrument:</b> CHEM (group)

**Blank Summary**

Analyte	Blank Result	Units	RDL	Notes
<b>QC1185883MB1</b>				
Orthophosphate, as P	ND	mg/L	0.02	
Orthophosphate, as PO4	ND	mg/L	0.06	

**Lab Control Spike/ Lab Control Spike Duplicate Summary**

Analyte	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
	LCS	LCSD	LCS	LCSD		LCS	LCSD	RPD	%Rec	RPD	
<b>QC1185883LCS1</b>											
Orthophosphate, as P	0.4		0.432		mg/L	108			80-120		
Orthophosphate, as PO4	1.2264		1.32		mg/L	108			80-120		

**Matrix Spike/Matrix Spike Duplicate Summary**

Analyte	Sample Amount	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
		MS	MSD	MS	MSD		MS	MSD	RPD	%Rec	RPD	
<b>QC1185883MS1, QC1185883MSD1</b>												
Orthophosphate, as P	ND	0.8	0.8	0.834	0.834	mg/L	104	104	0.0	75-125	20	
Orthophosphate, as PO4	ND	2.45	2.45	2.56	2.56	mg/L	104	104	0.0	75-125	20	

**Source: 397642-001**

<b>QCBatchID:</b> <u>QC1186029</u>	<b>Analyst:</b> trinh	<b>Method:</b> EPA 350.1
<b>Matrix:</b> Water	<b>Analyzed:</b> 12/29/2017	<b>Instrument:</b> CHEM (group)

**Blank Summary**

Analyte	Blank Result	Units	RDL	Notes
<b>QC1186029MB1</b>				
Ammonia, as Nitrogen	ND	mg/L	0.1	

**Lab Control Spike/ Lab Control Spike Duplicate Summary**

Analyte	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
	LCS	LCSD	LCS	LCSD		LCS	LCSD	RPD	%Rec	RPD	
<b>QC1186029LCS1</b>											
Ammonia, as Nitrogen	5		5.70		mg/L	114			80-120		

**Matrix Spike/Matrix Spike Duplicate Summary**

Analyte	Sample Amount	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
		MS	MSD	MS	MSD		MS	MSD	RPD	%Rec	RPD	
<b>QC1186029MS1, QC1186029MSD1</b>												
Ammonia, as Nitrogen	ND	5	5	6.03	6.01	mg/L	121	120	0.3	80-120	20	M

<b>QCBatchID:</b> <u>QC1186065</u>	<b>Analyst:</b> trinh	<b>Method:</b> SM 4500-P-B-5-E
<b>Matrix:</b> Water	<b>Analyzed:</b> 12/30/2017	<b>Instrument:</b> CHEM (group)

**Blank Summary**

Analyte	Blank Result	Units	RDL	Notes
<b>QC1186065MB1</b>				
Total Phosphorous as P	ND	mg/L	0.02	
Total Phosphorous as PO4	ND	mg/L	0.06	

**Lab Control Spike/ Lab Control Spike Duplicate Summary**

Analyte	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
	LCS	LCSD	LCS	LCSD		LCS	LCSD	RPD	%Rec	RPD	
<b>QC1186065LCS1</b>											
Total Phosphorous as P	0.4		0.391		mg/L	98			80-120		
Total Phosphorous as PO4	1.23		1.199		mg/L	97			80-120		

**Matrix Spike/Matrix Spike Duplicate Summary**

Analyte	Sample Amount	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
		MS	MSD	MS	MSD		MS	MSD	RPD	%Rec	RPD	
<b>QC1186065MS1, QC1186065MSD1</b>												
Total Phosphorous as P	0.041	0.4	0.4	0.444	0.415	mg/L	101	94	6.8	75-125	20	
Total Phosphorous as PO4	0.126	1.23	1.23	1.360	1.270	mg/L	100	93	6.8	75-125	20	

**Source: 397642-001**

<b>QCBatchID:</b> <u>QC1186085</u>	<b>Analyst:</b> trinh	<b>Method:</b> EPA 351.2
<b>Matrix:</b> Water	<b>Analyzed:</b> 01/02/2018	<b>Instrument:</b> CHEM (group)

**Blank Summary**

Analyte	Blank Result	Units	RDL	Notes
<b>QC1186085MB1</b>				
Total Kjeldahl Nitrogen	ND	mg/L	0.4	

**Lab Control Spike/ Lab Control Spike Duplicate Summary**

Analyte	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
	LCS	LCSD	LCS	LCSD		LCS	LCSD	RPD	%Rec	RPD	
<b>QC1186085LCS1</b>											
Total Kjeldahl Nitrogen	2.5		2.7		mg/L	108			80-120		

**Matrix Spike/Matrix Spike Duplicate Summary**

Analyte	Sample Amount	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
		MS	MSD	MS	MSD		MS	MSD	RPD	%Rec	RPD	
<b>QC1186085MS1, QC1186085MSD1</b>												
Total Kjeldahl Nitrogen	9.6	12.5	12.5	20	20	mg/L	83	83	0.0	80-120	20	<b>Source: 397674-001</b>

# Data Qualifiers and Definitions

## Qualifiers

<b>A</b>	See Report Comments.
<b>B</b>	Analyte was present in an associated method blank.
<b>B1</b>	Analyte was present in a sample and associated method blank greater than MDL but less than RDL.
<b>BQ1</b>	No valid test replicates. Sample Toxicity is possible. Best result was reported.
<b>BQ2</b>	No valid test replicates.
<b>BQ3</b>	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
<b>C</b>	Possible laboratory contamination.
<b>D</b>	RPD was not within control limits. The sample data was reported without further clarification.
<b>D1</b>	Lesser amount of sample was used due to insufficient amount of sample supplied.
<b>D2</b>	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
<b>D3</b>	Insufficient sample was supplied for TCLP. Client was notified. TCLP was performed per the Client's instructions.
<b>DW</b>	Sample result is calculated on a dry weigh basis.
<b>E</b>	Concentration is estimated because it exceeds the quantification limits of the method.
<b>I</b>	The sample was read outside of the method required incubation period.
<b>J</b>	Reported value is estimated
<b>L</b>	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
<b>M</b>	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
<b>M1</b>	The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference.
<b>M2</b>	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
<b>N1</b>	Sample chromatography does not match the specified TPH standard pattern.
<b>NC</b>	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
<b>P</b>	Sample was received without proper preservation according to EPA guidelines.
<b>P1</b>	Temperature of sample storage refrigerator was out of acceptance limits.
<b>P2</b>	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
<b>P3</b>	Per Client request, sample was composited for volatile analysis. Sample compositing for volatile analysis is not recommended due to potential loss of target analytes. Results may be biased low.
<b>Q1</b>	Analyte Calibration Verification exceeds criteria. The result is estimated.
<b>Q2</b>	Analyte calibration was not verified and the result was estimated.
<b>Q3</b>	Analyte initial calibration was not available or exceeds criteria. The result was estimated.
<b>S</b>	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
<b>S1</b>	The associated surrogate recovery was out of control limits; result is estimated.
<b>S2</b>	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
<b>S3</b>	Internal Standard did not meet recovery limits. Analyte concentration is estimated.
<b>T</b>	Sample was extracted/analyzed past the holding time.
<b>T1</b>	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
<b>T2</b>	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
<b>T3</b>	Sample received and analyzed out of hold time per client's request.
<b>T4</b>	Sample was analyzed out of hold time per client's request.
<b>T5</b>	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
<b>T6</b>	Hold time is indeterminable due to unspecified sampling time.
<b>T7</b>	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

## Definitions

<b>DF</b>	Dilution Factor
<b>MDL</b>	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
<b>ND</b>	Analyte was not detected or was less than the detection limit.
<b>NR</b>	Not Reported. See Report Comments.
<b>RDL</b>	Reporting Detection Limit
<b>TIC</b>	Tentatively Identified Compounds

**ENTHALPY ANALYTICAL, INC.**  
 931 W. Barkley Ave, Orange, CA 92868  
 Phone: (714) 771-6900 Fax: (714) 771-9933

Billing: Enthalpy - Orange  
 c/o Montrose Environmental Group  
 P.O. Box 741137, Los Angeles, CA 90074-1137



**Chain of Custody Record**  
 Lab No: 9176A2  
 Page:      of     

Standard:      4 Day:      3 Day:       
     2 Day:      1 Day:      Same Day:     

**Matrix:** A = Air DW = Drinking Water  
 FL = Food Liquid FS = Food Solid L = Liquid  
 PP = Pure Product S = Solid SeaW = Sea Water  
 SW = Swab W = Water WP = Wipe O = Other

**Preservatives:** 1 = Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 2 = HCl 3 = HNO<sub>3</sub>  
 4 = H<sub>2</sub>SO<sub>4</sub> 5 = NaOH 6 = Other

CUSTOMER INFORMATION				PROJECT INFORMATION				Analysis Request				Test Instructions / Comments							
Company:	Name:	Number:	Sampled By:	Sample ID	Sampling Date	Sampling Time	Matrix	Container No. / Size	Pres.	total Kjeldahl nitrogen	nitrate-nitrogen	ammonia	orthophosphate	total phosphorus	total calcium	fecal coliform	total coliform	total residual chlorine	
Chambers Group Inc.	Big Tajunga		Heather Franklin	Big T - East Pond	12/21/17	10:18 am													
Heather Franklin				Big T - West Pond	12/21/17	10:40 am													
hfranklin@chambersgroupinc.com				Big T - South Pond 4	12/21/17	11:45 AM													
Address:																			
Phone:	970-420-0810																		
Fax:																			

Signature	Print Name	Company / Title	Date / Time
<i>Heather Franklin</i>	Heather Franklin	Chambers Group / Biologist	12/21/17 / 2:00 pm
<i>Albert Vargas</i>	Albert Vargas	EPA	12/21/17 / 4:00 pm



## SAMPLE ACCEPTANCE CHECKLIST

### Section 1

Client: Chambers Group

Project: Big Tajunga

Date Received: 12-21-17

Sampler's Name Present:  Yes  No

### Section 2

Sample(s) received in a cooler?  Yes, How many? \_\_\_\_\_  No (skip section 2) Sample Temp (°C) (No Cooler) : 16.9

Sample Temp (°C), One from each cooler: #1: \_\_\_\_\_ #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

*(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)*

Shipping Information: \_\_\_\_\_

### Section 3

Was the cooler packed with:  Ice  Ice Packs  Bubble Wrap  Styrofoam  
 Paper  None  Other \_\_\_\_\_

Cooler Temp (°C): #1: \_\_\_\_\_ #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

### Section 4

	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)		✓	
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?		✓	
Are the containers labeled with the correct preservatives?			✓
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?		✓	

### Section 5 Explanations/Comments

Sample bottles cool to the touch but not brought in on ice. The client only gave us a single 1L poly for each sample. She said she is willing to collect more containers for the tests we can't do.

### Section 6

For discrepancies, how was the Project Manager notified?  Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_

Project Manager's response:

Completed By:  Date: 12-21-17



## Enthalpy Analytical, LLC

931 W. Barkley Ave - Orange, CA 92868  
Tel: (714)771-6900 Fax: (714)538-1209  
www.enthalpy.com  
info-sc@enthalpy.com



Client: Chambers Group  
Address: 5 Hutton Centre Drive  
Suite 750  
Santa Ana, CA 92707  
Attn: Heather Franklin

Lab Request: 397775  
Report Date: 01/17/2018  
Date Received: 12/28/2017  
Client ID: 14294

Comments: Big Tajunga

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAC are indicated on the report. This cover letter is an integral part of the final report.

---

**Sample #**    **Client Sample ID**

397775-001 Site 1  
397775-002 Site 2  
397775-003 Site 4

---

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

*Report Review performed by: Diane Galvan, Project Manager*

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 60 days from date received.

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<b>Matrix:</b> Water	<b>Client:</b> Chambers Group	<b>Collector:</b> client
<b>Sampled:</b> 12/28/2017 08:30	<b>Site:</b>	
<b>Sample #:</b> <u>397775-001</u>	<b>Client Sample #:</b> Site 1	<b>Sample Type:</b>

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 547	Prep Method: Method					QCBatchID:	
<b>Glyphosate</b>	<b>See Attached</b>	1	25	ug/L			
Method: EPA 8141A <i>NELAC</i>	Prep Method: EPA 3510C					QCBatchID:	
See Attached		1					

<b>Matrix:</b> Water	<b>Client:</b> Chambers Group	<b>Collector:</b> client
<b>Sampled:</b> 12/28/2017 08:15	<b>Site:</b>	
<b>Sample #:</b> <u>397775-002</u>	<b>Client Sample #:</b> Site 2	<b>Sample Type:</b>

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 547	Prep Method: Method					QCBatchID:	
<b>Glyphosate</b>	<b>See Attached</b>	1	25	ug/L			
Method: EPA 8141A <i>NELAC</i>	Prep Method: EPA 3510C					QCBatchID:	
See Attached		1					

<b>Matrix:</b> Water	<b>Client:</b> Chambers Group	<b>Collector:</b> client
<b>Sampled:</b> 12/28/2017 09:00	<b>Site:</b>	
<b>Sample #:</b> <u>397775-003</u>	<b>Client Sample #:</b> Site 4	<b>Sample Type:</b>

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 547	Prep Method: Method					QCBatchID:	
<b>Glyphosate</b>	<b>See Attached</b>	1	25	ug/L			
Method: EPA 8141A <i>NELAC</i>	Prep Method: EPA 3510C					QCBatchID:	
See Attached		1					

# Data Qualifiers and Definitions

## Qualifiers

<b>A</b>	See Report Comments.
<b>B</b>	Analyte was present in an associated method blank.
<b>B1</b>	Analyte was present in a sample and associated method blank greater than MDL but less than RDL.
<b>BQ1</b>	No valid test replicates. Sample Toxicity is possible. Best result was reported.
<b>BQ2</b>	No valid test replicates.
<b>BQ3</b>	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
<b>C</b>	Possible laboratory contamination.
<b>D</b>	RPD was not within control limits. The sample data was reported without further clarification.
<b>D1</b>	Lesser amount of sample was used due to insufficient amount of sample supplied.
<b>D2</b>	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
<b>D3</b>	Insufficient sample was supplied for TCLP. Client was notified. TCLP was performed per the Client's instructions.
<b>DW</b>	Sample result is calculated on a dry weigh basis.
<b>E</b>	Concentration is estimated because it exceeds the quantification limits of the method.
<b>I</b>	The sample was read outside of the method required incubation period.
<b>J</b>	Reported value is estimated
<b>L</b>	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
<b>M</b>	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
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<b>M2</b>	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
<b>N1</b>	Sample chromatography does not match the specified TPH standard pattern.
<b>NC</b>	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
<b>P</b>	Sample was received without proper preservation according to EPA guidelines.
<b>P1</b>	Temperature of sample storage refrigerator was out of acceptance limits.
<b>P2</b>	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
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<b>S</b>	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
<b>S1</b>	The associated surrogate recovery was out of control limits; result is estimated.
<b>S2</b>	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
<b>S3</b>	Internal Standard did not meet recovery limits. Analyte concentration is estimated.
<b>T</b>	Sample was extracted/analyzed past the holding time.
<b>T1</b>	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
<b>T2</b>	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
<b>T3</b>	Sample received and analyzed out of hold time per client's request.
<b>T4</b>	Sample was analyzed out of hold time per client's request.
<b>T5</b>	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
<b>T6</b>	Hold time is indeterminable due to unspecified sampling time.
<b>T7</b>	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

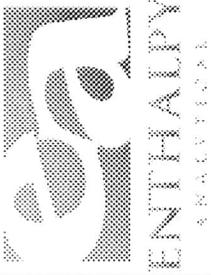
## Definitions

<b>DF</b>	Dilution Factor
<b>MDL</b>	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
<b>ND</b>	Analyte was not detected or was less than the detection limit.
<b>NR</b>	Not Reported. See Report Comments.
<b>RDL</b>	Reporting Detection Limit
<b>TIC</b>	Tentatively Identified Compounds

**ENTHALPY ANALYTICAL, INC.**

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 Phone: (714) 771-6900 Fax: (714)771-9933

Billing: Enthalpy - Orange  
 c/o Montrose Environmental Group  
 P.O. Box 741137, Los Angeles, CA 90074-1137



**Chain of Custody Record**

Lab No: 997775  
 Page: \_\_\_\_\_ of \_\_\_\_\_

Matrix: A = Air DW = Drinking Water  
 FL = Food Liquid FS = Food Solid L = Liquid  
 PP = Pure Product S = Solid SeaW = Sea Water  
 SW = Swab W = Water WP = Wipe O = Other

**Turn Around Time (Rush by advanced notice only)**

Standard: \_\_\_\_\_  
 4 Day: \_\_\_\_\_  
 1 Day: \_\_\_\_\_  
 3 Day: \_\_\_\_\_  
 Same Day: \_\_\_\_\_

Preservatives: 1 = Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 2 = HCl 3 = HNO<sub>3</sub>  
 4 = H<sub>2</sub>SO<sub>4</sub> 5 = NaOH 6 = Other

**PROJECT INFORMATION**

Company:	Chambers Group (14294)	Name:	
Report To:	Heather Franklin	Number:	
Email:	<a href="mailto:hfranklin@chambersgroup.com">hfranklin@chambersgroup.com</a>	P.O. #:	
Address:	5 Hutton Centre Drive, Suite 750	Address:	
	Santa Ana, CA 92707	Global ID:	
Phone:	949-261-5414	Sampled By:	H. Franklin
Fax:	714-545-2255		

**Analysis Request**

TKN	
Nitrite-N, Nitrate-N	
Ammonia	
Orthophosphate	
Total Phosphorous	
T Collform, F Collform	
Glyphosate	X
Chlorpyrifos	X
Organophosphorous Pesticides	X
Total Residual Chlorine	

**Test Instructions / Comments**

ok to run  
 HR

Sample ID	Sampling Date	Sampling Time	Matrix	Container No. / Size	Pres.
1 Site 1	12/28/17	8:30am	W	3	
2 Site 2	12/28/17	8:15am	W	3	
3 Site 4	12/28/17	9:00am	W	3	
4					
5					
6					
7					
8					
9					
10					

**CUSTOMER INFORMATION**

Signature	Print Name	Company / Title	Date / Time
<i>Heather Franklin</i>	Heather Franklin	Chambers Group/Biologist	12/28/17 / 10:50am
<i>Jeffrey Lee</i>	Jeffrey Lee	EA	12/28/17 1050
Relinquished By:			
Received By:			
Relinquished By:			
Received By:			
Relinquished By:			
Received By:			



# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

**Section 1**  
 Client: Chambers Project: \_\_\_\_\_  
 Date Received: 12/28/17 Sampler's Name Present:  Yes  No

**Section 2**  
 Sample(s) received in a cooler?  Yes, How many? \_\_\_\_\_  No (skip section 2) Sample Temp (°C) (No Cooler): 16.2  
 Sample Temp (°C), One from each cooler: #1: \_\_\_\_\_ #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_  
 (Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)  
 Shipping Information: \_\_\_\_\_

**Section 3**  
 Was the cooler packed with:  Ice  Ice Packs  Bubble Wrap  Styrofoam  
 Paper  None  Other \_\_\_\_\_  
 Cooler Temp (°C): #1: \_\_\_\_\_ #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

Section 4	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✓
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?	✓		
Is there headspace in the VOA vials greater than 5-6 mm in diameter?	✓		
Was a sufficient amount of sample submitted for the requested tests?	✓		

**Section 5 Explanations/Comments**  
Headspace: Site 4 (1/2), Site 2 (1/2),  
Out of temp range. Client signed off. Ok to run.

**Section 6**  
 For discrepancies, how was the Project Manager notified?  Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Email (email sent to/on): DG / 12/28/17 @ 1106  
 Project Manager's response: \_\_\_\_\_

Completed By: [Signature] Date: 12/28/17

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Savannah  
5102 LaRoche Avenue  
Savannah, GA 31404  
Tel: (912)354-7858

TestAmerica Job ID: 680-147345-1  
Client Project/Site: 397775

For:  
Enthalpy Analytical, Inc  
1 Park Plaza  
Irvine, California 92614

Attn: Diane Galvan

*Kathryn Smith*

Authorized for release by:  
1/11/2018 2:24:31 PM

Kathryn Smith, Manager of Project Management  
(912)354-7858  
[kathy.smith@testamericainc.com](mailto:kathy.smith@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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## Definitions/Glossary

Client: Enthalpy Analytical, Inc  
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Sample Summary

Client: Enthalpy Analytical, Inc  
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-147345-1	Site 1 (397775-001)	Water	12/28/17 08:30	12/29/17 09:05
680-147345-2	Site 2 (397775-002)	Water	12/28/17 08:15	12/29/17 09:05
680-147345-3	Site 4 (397775-003)	Water	12/28/17 09:00	12/29/17 09:05

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# Case Narrative

Client: Enthalpy Analytical, Inc  
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

**Job ID: 680-147345-1**

**Laboratory: TestAmerica Savannah**

**Narrative**

## CASE NARRATIVE

**Client: Enthalpy Analytical, Inc**

**Project: 397775**

**Report Number: 680-147345-1**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

### RECEIPT

The samples were received on 12/29/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.7 C.

### GLYPHOSATE

Samples Site 1 (397775-001) (680-147345-1), Site 2 (397775-002) (680-147345-2) and Site 4 (397775-003) (680-147345-3) were analyzed for Glyphosate in accordance with EPA Method 547. The samples were analyzed on 01/10/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Client Sample Results

Client: Enthalpy Analytical, Inc  
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

## Client Sample ID: Site 1 (397775-001)

Lab Sample ID: 680-147345-1

Date Collected: 12/28/17 08:30

Matrix: Water

Date Received: 12/29/17 09:05

### Method: 547 LL - Glyphosate (DAI HPLC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Glyphosate	ND		6.0		ug/L			01/10/18 20:17	1

## Client Sample ID: Site 2 (397775-002)

Lab Sample ID: 680-147345-2

Date Collected: 12/28/17 08:15

Matrix: Water

Date Received: 12/29/17 09:05

### Method: 547 LL - Glyphosate (DAI HPLC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Glyphosate	ND		6.0		ug/L			01/10/18 20:36	1

## Client Sample ID: Site 4 (397775-003)

Lab Sample ID: 680-147345-3

Date Collected: 12/28/17 09:00

Matrix: Water

Date Received: 12/29/17 09:05

### Method: 547 LL - Glyphosate (DAI HPLC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Glyphosate	ND		6.0		ug/L			01/10/18 20:55	1

# QC Sample Results

Client: Enthalpy Analytical, Inc  
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

## Method: 547 LL - Glyphosate (DAI HPLC)

**Lab Sample ID: MB 680-509072/2**

**Matrix: Water**

**Analysis Batch: 509072**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Glyphosate	ND		6.0		ug/L			01/10/18 16:08	1

**Lab Sample ID: LCS 680-509072/25**

**Matrix: Water**

**Analysis Batch: 509072**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Glyphosate	200	211		ug/L		106	70 - 130

**Lab Sample ID: LCSD 680-509072/26**

**Matrix: Water**

**Analysis Batch: 509072**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Glyphosate	200	202		ug/L		101	70 - 130	4	30

**Lab Sample ID: 680-147345-3 MS**

**Matrix: Water**

**Analysis Batch: 509072**

**Client Sample ID: Site 4 (397775-003)**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Glyphosate	ND		200	207		ug/L		103	70 - 130

**Lab Sample ID: 680-147345-3 MSD**

**Matrix: Water**

**Analysis Batch: 509072**

**Client Sample ID: Site 4 (397775-003)**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Glyphosate	ND		200	206		ug/L		103	70 - 130	0	30

# QC Association Summary

Client: Enthalpy Analytical, Inc  
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

## HPLC/IC

### Analysis Batch: 509072

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-147345-1	Site 1 (397775-001)	Total/NA	Water	547 LL	
680-147345-2	Site 2 (397775-002)	Total/NA	Water	547 LL	
680-147345-3	Site 4 (397775-003)	Total/NA	Water	547 LL	
MB 680-509072/2	Method Blank	Total/NA	Water	547 LL	
LCS 680-509072/25	Lab Control Sample	Total/NA	Water	547 LL	
LCSD 680-509072/26	Lab Control Sample Dup	Total/NA	Water	547 LL	
680-147345-3 MS	Site 4 (397775-003)	Total/NA	Water	547 LL	
680-147345-3 MSD	Site 4 (397775-003)	Total/NA	Water	547 LL	

# Lab Chronicle

Client: Enthalpy Analytical, Inc  
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

## Client Sample ID: Site 1 (397775-001)

Lab Sample ID: 680-147345-1

Date Collected: 12/28/17 08:30

Matrix: Water

Date Received: 12/29/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	547 LL		1	1 mL	1 mL	509072	01/10/18 20:17	KMB	TAL SAV
Instrument ID: CLCR										

## Client Sample ID: Site 2 (397775-002)

Lab Sample ID: 680-147345-2

Date Collected: 12/28/17 08:15

Matrix: Water

Date Received: 12/29/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	547 LL		1	1 mL	1 mL	509072	01/10/18 20:36	KMB	TAL SAV
Instrument ID: CLCR										

## Client Sample ID: Site 4 (397775-003)

Lab Sample ID: 680-147345-3

Date Collected: 12/28/17 09:00

Matrix: Water

Date Received: 12/29/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	547 LL		1	1 mL	1 mL	509072	01/10/18 20:55	KMB	TAL SAV
Instrument ID: CLCR										

**Laboratory References:**

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

## Accreditation/Certification Summary

Client: Enthalpy Analytical, Inc  
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

### Laboratory: TestAmerica Savannah

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-18
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	09-22-19
Arizona	State Program	9	AZ808	12-14-18
Arkansas DEQ	State Program	6	88-0692	02-01-19
California	State Program	9	2939	06-30-18
Colorado	State Program	8	N/A	12-31-18
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	803	06-30-18
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-18
Illinois	NELAP	5	200022	11-30-18
Indiana	State Program	5	N/A	06-30-18
Iowa	State Program	7	353	06-30-19
Kentucky (DW)	State Program	4	90084	12-31-18
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-18 *
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-18
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-18
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-18
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-18
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-18
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-18
North Carolina (WW/SW)	State Program	4	269	12-31-18
Oklahoma	State Program	6	9984	08-31-18
Pennsylvania	NELAP	3	68-00474	06-30-18
Puerto Rico	State Program	2	GA00006	12-31-18
South Carolina	State Program	4	98001	06-30-18
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-18
Texas	State Program	6	T104704185	06-30-18
US Fish & Wildlife	Federal		LE058448-0	07-31-18
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-18
Washington	State Program	10	C805	06-10-18
West Virginia DEP	State Program	3	094	06-30-18
Wisconsin	State Program	5	999819810	08-31-18
Wyoming	State Program	8	8TMS-L	06-30-16 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Savannah

# Method Summary

Client: Enthalpy Analytical, Inc  
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

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Method	Method Description	Protocol	Laboratory
547 LL	Glyphosate (DAI HPLC)	EPA	TAL SAV

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

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# Enthalpy Analytical

Formerly Associated Labs  
1 Park Plaza, Suite 1000  
Irvine, CA 92614  
Tel: 714.6900 Fax: 714.538.1209  
info-sc@enthalpy.com



### Subcontract Laboratory:

Test America - Savannah  
5102 LaRoche Avenue  
Savannah, GA 31404  
912-354-7858  
ATTN: Kathy Smith  
PO# Pending

Project: 397775 Due:

PM: Diane Galvan

Email: diane.galvan@enthalpy.com

CC: incomingreports@enthalpy.com

Require:  EDD  EDF  EDT

Report To:  MDL

### Note:

Matrix	Sampled	Sample ID	Analysis	Comment
Water	12/28/17 08:30	Site 1 (397775-001)	547 Out	Glyphosate
Water	12/28/17 08:15	Site 2 (397775-002)	547 Out	Glyphosate
Water	12/28/17 09:00	Site 4 (397775-003)	547 Out	Glyphosate

### Note:

Standard TAT.

Relinquished By	Received By:
<i>Camp</i>	
Date/Time 12/28/17 1400	Date/Time
	<i>MTyler</i>
Date/Time	Date/Time 12/29/17 905
	1.10c (UP) 0.70c



680-147345 Chain of Custody

## Login Sample Receipt Checklist

Client: Enthalpy Analytical, Inc

Job Number: 680-147345-1

**Login Number: 147345**

**List Source: TestAmerica Savannah**

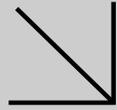
**List Number: 1**

**Creator: Tyler, Matthew M**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Calscience



**WORK ORDER NUMBER: 17-12-2150**

*The difference is service*



AIR | SOIL | WATER | MARINE CHEMISTRY

**Analytical Report For**

**Client:** Enthalpy Analytical, Inc.

**Client Project Name:** 397775

**Attention:** Diane Galvan  
931 W. Barkley Avenue  
Orange, CA 92868-1208

Approved for release on 01/15/2018 by:  
Xuan Dang  
Project Manager

ResultLink ▶

Email your PM ▶

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

# Contents

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Client Project Name: 397775  
Work Order Number: 17-12-2150

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2	Sample Summary. . . . .	4
3	Client Sample Data. . . . .	5
	3.1 EPA 8141A Organophosphorus Pesticides (Aqueous). . . . .	5
4	Quality Control Sample Data. . . . .	9
	4.1 LCS/LCSD. . . . .	9
5	Glossary of Terms and Qualifiers. . . . .	10
6	Chain-of-Custody/Sample Receipt Form. . . . .	11

**Condition Upon Receipt:**

Samples were received under Chain-of-Custody (COC) on 12/29/17. They were assigned to Work Order 17-12-2150.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

**Holding Times:**

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of  $\leq 15$  minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

**Quality Control:**

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

**Subcontractor Information:**

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

**Additional Comments:**

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

## Sample Summary

Client: Enthalpy Analytical, Inc.	Work Order:	17-12-2150
931 W. Barkley Avenue	Project Name:	397775
Orange, CA 92868-1208	PO Number:	1015049
	Date/Time Received:	12/29/17 12:45
	Number of Containers:	3

Attn: Diane Galvan

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
Site 1 (397775-001)	17-12-2150-1	12/28/17 08:30	1	Aqueous
Site 2 (397775-002)	17-12-2150-2	12/28/17 08:15	1	Aqueous
Site 4 (397775-003)	17-12-2150-3	12/28/17 09:00	1	Aqueous



Calscience

## Analytical Report

Enthalpy Analytical, Inc.  
931 W. Barkley Avenue  
Orange, CA 92868-1208

Date Received: 12/29/17  
Work Order: 17-12-2150  
Preparation: EPA 3510C  
Method: EPA 8141A  
Units: mg/L

Project: 397775

Page 1 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Site 1 (397775-001)	17-12-2150-1-A	12/28/17 08:30	Aqueous	GC 68	01/04/18	01/11/18 20:30	180104L04

Parameter	Result	RL	DF	Qualifiers
Azinphos Methyl	ND	0.0048	1.00	
Bolstar	ND	0.0048	1.00	
Chlorpyrifos	ND	0.0048	1.00	
Coumaphos	ND	0.0048	1.00	
Diazinon	ND	0.0048	1.00	
Dichlorvos	ND	0.0048	1.00	
Disulfoton	ND	0.0095	1.00	
Ethoprop	ND	0.0048	1.00	
Fensulfothion	ND	0.0048	1.00	
Fenthion	ND	0.0048	1.00	
Merphos	ND	0.0048	1.00	
Methyl Parathion	ND	0.0048	1.00	
Mevinphos	ND	0.0048	1.00	
Naled	ND	0.038	1.00	
Phorate	ND	0.0048	1.00	
Ronnel	ND	0.0048	1.00	
Stirophos	ND	0.019	1.00	
Tokuthion	ND	0.0048	1.00	
Trichloronate	ND	0.0048	1.00	
Demeton-o/s	ND	0.0048	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tributylphosphate	42	30-130	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

Enthalpy Analytical, Inc.  
931 W. Barkley Avenue  
Orange, CA 92868-1208

Date Received: 12/29/17  
Work Order: 17-12-2150  
Preparation: EPA 3510C  
Method: EPA 8141A  
Units: mg/L

Project: 397775

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Site 2 (397775-002)	17-12-2150-2-A	12/28/17 08:15	Aqueous	GC 68	01/04/18	01/11/18 21:18	180104L04

Parameter	Result	RL	DF	Qualifiers
Azinphos Methyl	ND	0.0048	1.00	
Bolstar	ND	0.0048	1.00	
Chlorpyrifos	ND	0.0048	1.00	
Coumaphos	ND	0.0048	1.00	
Diazinon	ND	0.0048	1.00	
Dichlorvos	ND	0.0048	1.00	
Disulfoton	ND	0.0095	1.00	
Ethoprop	ND	0.0048	1.00	
Fensulfothion	ND	0.0048	1.00	
Fenthion	ND	0.0048	1.00	
Merphos	ND	0.0048	1.00	
Methyl Parathion	ND	0.0048	1.00	
Mevinphos	ND	0.0048	1.00	
Naled	ND	0.038	1.00	
Phorate	ND	0.0048	1.00	
Ronnel	ND	0.0048	1.00	
Stirophos	ND	0.019	1.00	
Tokuthion	ND	0.0048	1.00	
Trichloronate	ND	0.0048	1.00	
Demeton-o/s	ND	0.0048	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tributylphosphate	44	30-130	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

Enthalpy Analytical, Inc.  
931 W. Barkley Avenue  
Orange, CA 92868-1208

Date Received: 12/29/17  
Work Order: 17-12-2150  
Preparation: EPA 3510C  
Method: EPA 8141A  
Units: mg/L

Project: 397775

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Site 4 (397775-003)	17-12-2150-3-A	12/28/17 09:00	Aqueous	GC 68	01/04/18	01/11/18 22:06	180104L04

Parameter	Result	RL	DF	Qualifiers
Azinphos Methyl	ND	0.0048	1.00	
Bolstar	ND	0.0048	1.00	
Chlorpyrifos	ND	0.0048	1.00	
Coumaphos	ND	0.0048	1.00	
Diazinon	ND	0.0048	1.00	
Dichlorvos	ND	0.0048	1.00	
Disulfoton	ND	0.0095	1.00	
Ethoprop	ND	0.0048	1.00	
Fensulfothion	ND	0.0048	1.00	
Fenthion	ND	0.0048	1.00	
Merphos	ND	0.0048	1.00	
Methyl Parathion	ND	0.0048	1.00	
Mevinphos	ND	0.0048	1.00	
Naled	ND	0.038	1.00	
Phorate	ND	0.0048	1.00	
Ronnel	ND	0.0048	1.00	
Stirophos	ND	0.019	1.00	
Tokuthion	ND	0.0048	1.00	
Trichloronate	ND	0.0048	1.00	
Demeton-o/s	ND	0.0048	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tributylphosphate	40	30-130	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Analytical Report

Enthalpy Analytical, Inc.  
931 W. Barkley Avenue  
Orange, CA 92868-1208

Date Received: 12/29/17  
Work Order: 17-12-2150  
Preparation: EPA 3510C  
Method: EPA 8141A  
Units: mg/L

Project: 397775

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-15-963-224	N/A	Aqueous	GC 68	01/04/18	01/12/18 09:57	180104L04

Parameter	Result	RL	DF	Qualifiers
Azinphos Methyl	ND	0.0050	1.00	
Bolstar	ND	0.0050	1.00	
Chlorpyrifos	ND	0.0050	1.00	
Coumaphos	ND	0.0050	1.00	
Diazinon	ND	0.0050	1.00	
Dichlorvos	ND	0.0050	1.00	
Disulfoton	ND	0.010	1.00	
Ethoprop	ND	0.0050	1.00	
Fensulfothion	ND	0.0050	1.00	
Fenthion	ND	0.0050	1.00	
Merphos	ND	0.0050	1.00	
Methyl Parathion	ND	0.0050	1.00	
Mevinphos	ND	0.0050	1.00	
Naled	ND	0.040	1.00	
Phorate	ND	0.0050	1.00	
Ronnel	ND	0.0050	1.00	
Stirophos	ND	0.020	1.00	
Tokuthion	ND	0.0050	1.00	
Trichloronate	ND	0.0050	1.00	
Demeton-o/s	ND	0.0050	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tributylphosphate	70	30-130	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

## Quality Control - LCS/LCSD

Enthalpy Analytical, Inc.  
931 W. Barkley Avenue  
Orange, CA 92868-1208

Date Received: 12/29/17  
Work Order: 17-12-2150  
Preparation: EPA 3510C  
Method: EPA 8141A

Project: 397775

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Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number				
099-15-963-224	LCS	Aqueous	GC 68	01/04/18	01/11/18 18:55	180104L04				
099-15-963-224	LCSD	Aqueous	GC 68	01/04/18	01/12/18 10:45	180104L04				
Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
Azinphos Methyl	0.04000	0.03416	85	0.03848	96	30-130	13-147	12	0-30	
Bolstar	0.04000	0.03765	94	0.03819	95	30-130	13-147	1	0-30	
Chlorpyrifos	0.04000	0.03309	83	0.03318	83	30-130	13-147	0	0-30	
Coumaphos	0.04000	0.03329	83	0.03403	85	30-130	13-147	2	0-30	
Diazinon	0.04000	0.03653	91	0.03755	94	30-130	13-147	3	0-30	
Disulfoton	0.04000	0.03978	99	0.03950	99	30-130	13-147	1	0-30	
Ethoprop	0.04000	0.03603	90	0.03680	92	30-130	13-147	2	0-30	
Fensulfothion	0.04000	0.04175	104	0.04207	105	30-130	13-147	1	0-30	
Fenthion	0.04000	0.03724	93	0.03679	92	30-130	13-147	1	0-30	
Merphos	0.04000	0.03408	85	0.03322	83	30-130	13-147	3	0-30	
Methyl Parathion	0.04000	0.04141	104	0.03952	99	30-130	13-147	5	0-30	
Phorate	0.04000	0.04664	117	0.04454	111	30-130	13-147	5	0-30	
Ronnel	0.04000	0.03284	82	0.03336	83	30-130	13-147	2	0-30	
Stirophos	0.04000	0.03417	85	0.03421	86	30-130	13-147	0	0-30	
Tokuthion	0.04000	0.03582	90	0.03567	89	30-130	13-147	0	0-30	
Trichloronate	0.04000	0.03597	90	0.03622	91	30-130	13-147	1	0-30	

Total number of LCS compounds: 16

Total number of ME compounds: 0

Total number of ME compounds allowed: 1

LCS ME CL validation result: Pass

RPD: Relative Percent Difference. CL: Control Limits

## Glossary of Terms and Qualifiers

Work Order: 17-12-2150

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<u>Qualifiers</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

17-12-2150



**Enthalpy Analytical**  
 Formerly Associated Labs  
 1 Park Plaza, Suite 1000  
 Irvine, CA 92614  
 Tel: 714.771.6900 Fax: 714.538.1209  
 info-sc@enthalpy.com



**Subcontract Laboratory:**

Eurofins CalScience - Sub  
 7440 Lincoln Way  
 Garden Grove, CA 92841

ATTN: Xuan Dang  
 PO# Pending

**Project:** 397775 **Due:**

PM: Diane Galvan

Email: diane.galvan@enthalpy.com

CC: incomingreports@enthalpy.com

Require:  EDD  EDF  EDT

Report To:  MDL

**Note:**

Matrix	Sampled	Sample ID	Analysis	Comment
Water	12/28/17 08:30	Site 1 (397775-001)	8141_Out	Organophosphorus Pesticides
Water	12/28/17 08:15	Site 2 (397775-002)	8141_Out	Organophosphorus Pesticides
Water	12/28/17 09:00	Site 4 (397775-003)	8141_Out	Organophosphorus Pesticides

**Note:**

Standard TAT.

Relinquished By	Received By:
<i>[Signature]</i>	<i>[Signature]</i>
Date/Time 12/29/17 1119	Date/Time 12/29/17 1119
<i>[Signature]</i>	<i>[Signature]</i>
Date/Time 12/29/17 1245	Date/Time 12/29/17 1245

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**SAMPLE RECEIPT CHECKLIST**

COOLER 1 OF 1

CLIENT: Enthalpy Analytical

DATE: 12/29/2017

**TEMPERATURE:** (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)  
 Thermometer ID: SC6 (CF: -0.4°C); Temperature (w/o CF): 3-9 °C (w/ CF): 3.5 °C;  Blank  Sample  
 Sample(s) outside temperature criteria (PM/APM contacted by: \_\_\_\_\_)  
 Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling  
 Sample(s) received at ambient temperature; placed on ice for transport by courier  
 Ambient Temperature:  Air  Filter  
 Checked by: 836

**CUSTODY SEAL:**  
 Cooler  Present and Intact  Present but Not Intact  Not Present  N/A Checked by: 836  
 Sample(s)  Present and Intact  Present but Not Intact  Not Present  N/A Checked by: 836

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Sampling date <input type="checkbox"/> Sampling time <input type="checkbox"/> Matrix <input type="checkbox"/> Number of containers			
<input type="checkbox"/> No analysis requested <input type="checkbox"/> Not relinquished <input type="checkbox"/> No relinquished date <input type="checkbox"/> No relinquished time			
Sampler's name indicated on COC .....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample container label(s) consistent with COC .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and in good condition .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper containers for analyses requested .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sufficient volume/mass for analyses requested .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aqueous samples for certain analyses received within 15-minute holding time			
<input type="checkbox"/> pH <input type="checkbox"/> Residual Chlorine <input type="checkbox"/> Dissolved Sulfide <input type="checkbox"/> Dissolved Oxygen .....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Proper preservation chemical(s) noted on COC and/or sample container .....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unpreserved aqueous sample(s) received for certain analyses			
<input type="checkbox"/> Volatile Organics <input type="checkbox"/> Total Metals <input type="checkbox"/> Dissolved Metals			
Acid/base preserved samples - pH within acceptable range .....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Container(s) for certain analysis free of headspace.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Volatile Organics <input type="checkbox"/> Dissolved Gases (RSK-175) <input type="checkbox"/> Dissolved Oxygen (SM 4500)			
<input type="checkbox"/> Carbon Dioxide (SM 4500) <input type="checkbox"/> Ferrous Iron (SM 3500) <input type="checkbox"/> Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation .....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**CONTAINER TYPE:** (Trip Blank Lot Number: \_\_\_\_\_)  
 Aqueous:  VOA  VOA<sub>h</sub>  VOA<sub>na2</sub>  100PJ  100PJ<sub>na2</sub>  125AGB  125AGB<sub>h</sub>  125AGB<sub>p</sub>  125PB  125PB<sub>z</sub> (pH\_\_9)  
 250AGB  250CGB  250CGB<sub>s</sub> (pH\_\_2)  250PB  250PB<sub>n</sub> (pH\_\_2)  500AGB  500AGJ  500AGJ<sub>s</sub> (pH\_\_2)  500PB  
 1AGB  1AGB<sub>na2</sub>  1AGB<sub>s</sub> (pH\_\_2)  1AGB<sub>s</sub> (O&G)  1PB  1PB<sub>na</sub> (pH\_\_12)  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  
 Solid:  4ozCGJ  8ozCGJ  16ozCGJ  Sleeve (\_\_\_\_)  EnCores® (\_\_\_\_)  TerraCores® (\_\_\_\_)  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  
 Air:  Tedlar™  Canister  Sorbent Tube  PUF  \_\_\_\_\_ Other Matrix (\_\_\_\_):  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_  
 Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Resealable Bag  
 Preservative: b = buffered, f = filtered, h = HCl, n = HNO<sub>3</sub>, na = NaOH, na<sub>2</sub> = Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>, p = H<sub>3</sub>PO<sub>4</sub>, Labeled/Checked by: 836  
 s = H<sub>2</sub>SO<sub>4</sub>, u = ultra-pure, x = Na<sub>2</sub>SO<sub>3</sub>+NaHSO<sub>4</sub>.H<sub>2</sub>O, z<sub>na</sub> = Zn (CH<sub>3</sub>CO<sub>2</sub>)<sub>2</sub> + NaOH Reviewed by: 1053